

Montana Weather/Precipitation Summary

June 2014 by NOAA's National Weather Service Great Falls Montana

Temperatures averaged a below normal across the state in June. Flat westerly flow persisted for the month (Figure 1). Normally, a ridge of high pressure develops over eastern Montana in June. The lower-than-normal heights and westerly flow brought higher than normal precipitation and cooler than normal temperatures for June.

Statewide composite temperatures averaged 2.1°F below normal for the month. Figure 2 shows the areas of temperature anomalies. The greatest negative anomaly, around 5°F, was in over the hi-line in north central Montana. The smallest negative departures were in southwest Montana. The warmest average monthly temperature was 64.9°F at Glendive, and the coolest was 46.2°F at Elk Park. For the past 12-months, the statewide composite average temperature is 0.7°F below normal. Six of the past 12 months have had temperature averages below normal.

The monthly departure from normal for precipitation across Montana is shown in Figure 3. This figure shows that above normal precipitation amounts were scattered throughout the state, intermixed with below normal regions. The highest precipitation amounts fell over the northern Rockies, where Noisy Basin picked up nearly 11 inches and Heart Butte measured almost 10 inches. Overall, June was 0.29-inches above normal. The statewide composite precipitation for the past 12 months is 1.42-inches above normal. While some portions of the state continue to see precipitation deficits, the statewide average for the first six months of 2014 is the 31st highest of record, and the highest since 2011.

Snow fell during the month. One storm brought up to five inches to the highest elevations in the southwest on the 14th. Another storm brought up to 20 inches of snow to portions of Glacier Park on the 18-20th.

On a statewide average, winds were below normal this month. This was the 25th calmest June of record. The statewide composite average was 8.1 mph (right at normal), with the 12-month average running 0.5 mph below average. The fastest average speed was 14.3 mph at Deep Creek RAWS, while King Coulee RAWS recorded an average of 13.0 mph. The fastest measured gust of the month, 74 mph, occurred at the Dillon Agrimet during a thunderstorm. Cut Bank had a peak gust of only 43 mph. This was the lowest monthly gust for June at Cut Bank since 1986.

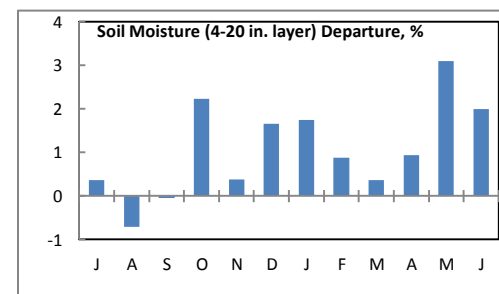
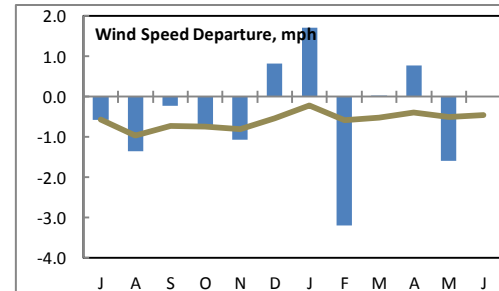
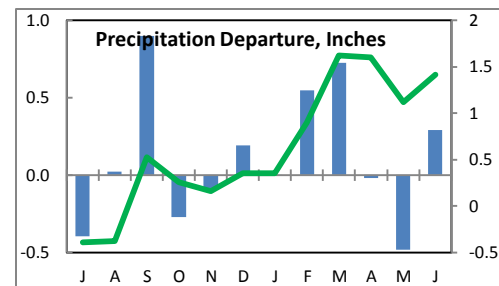
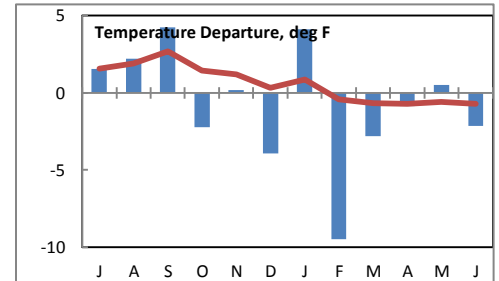
The statewide soil moisture values for June were the fourth highest of record for the month. See the soil moisture plot to the right. The values are about 2.0 points above normal.

Refer to NCDC's State of the Climate report for the latest monthly discussion:

<http://www.ncdc.noaa.gov/sotc/>.

June 1-13

Temperatures remained close to normal for the first two weeks of June for much of the state. Occasional thunderstorms produced severe weather. On the third, 1.5-inch hail fell near Colstrip,



while on the fourth, golfball-size hail fell in far southeast Montana at Albion. Thunderstorm gusts to 67 mph were recorded at Bradshaw Creek. Ahead of a cold front on the ninth, Wolf Point reached 88°F, one of the warmer readings for the state for the month. Late-night thunderstorms produced golf-ball size hail at Fort Shaw on the 12th. On the 13th, thunderstorm wind gusts reached 67 mph at South Sawmill RAWS, while a small rope-type tornado was observed south of Chinook. This tornado lasted but one minute.

Great Falls' high temperature for the month was 80°F on the 8th. This was the coolest extreme June monthly temperature since 1998. The monthly temperature range of 42°F (the lowest temperature was 38°F) was the smallest monthly range for June at Great Falls in nearly 40 years (since 1975).

June 14-20

A major spring storm spread precipitation and cooler air across much of the state. Snow fell at the higher elevations in the southwest on the 14th. At the same time, the Helena valley was in the fifth week of a dry spell. For this period, it was one of the driest such periods of record for this time of year. While the spring storm was delivering moisture to the state, severe weather broke out in eastern Montana. Three-inch hail fell at Ismay (Custer), while a large (EF3) tornado occurred in the Capitol area (Carter) (Fig. 5). Thunderstorms produced over four inches of rain at Westmore (Fallon), while flooding was reported over portions of McCone County. A weather station in Wibaux County reported 5.29-inches of rain. Kalispell set a daily rainfall record on the 17th, recording 1.74-inches of rain. The old record was 1.13-inches set in 2010. Two-inches of snow fell at Essex, while the Sperry Chalet (6580 ft) in Glacier Park measured 12 inches of snow. The storm continued to dump rain, which was concentrated over Glacier National Park and the adjacent plains east of the divide. On the 18th, Kalispell again set a daily rainfall record, measuring 1.16-inches. Cut Bank picked up 2.37-inches, breaking their daily record of 0.58-inches set in 2013. Flooding was reported at several locations just east of the Rockies over northern Montana. When it was all over, up to 8 inches of rain fell, with rock and mud slides on Highway 49. By the morning of the 20th, Sperry Chalet had measured 20 inches of snow. Cold air was over central Montana. On the 19th, Great Falls reached a high temperature of 49 degrees. This was the latest in the season that the high temperature remained below 50°F in nearly 100 years, since 1918! On the 20th, lightning struck a wind turbine near Great Falls (Fig. 4).

June 21-30

The rest of June brought near to below normal temperatures and continued sporadic precipitation. On the 24th, a thunderstorm wind gust to 74 mph was recorded near Dillon. This was the strongest gust of the month. Severe thunderstorms brought golfball-size hail to Melville on the 26th, and wind gusts to 65 mph at Plevna. Heavy rainfall in the southwest produced a new daily rainfall record at Butte. They received 1.48-inches, beating the old record of 0.87-inches set in 2004. As cooler-than-normal temperatures rounded out the month, winds averaged around 20 mph on the 28th and 29th over central Montana. Thunderstorms produced gusts to 70 mph at Richey (Dawson) on the 29th.

The warmest temperature of the month occurred at Thompson Falls on the 24th, when they reached 89°F. While warm, this was the coolest June extreme of any June since records began in 1892. This bests the record last set when Bridger reached only 92°F, the warmest temperature in Montana in June 1947.

Precipitation/convection

Severe convective weather occurred on ten days in June. Normal for June is 12 days. Two tornados were spotted during the month. One small tornado, which lasted for less than one minute was seen about 11 miles south of Chinook on the 13th. The larger tornado, and EF3, was on the ground for about one hour in the Capitol area of southeast Montana on the 17th. Hail to 3 inches was reported near Ismay on the 17th.

June summary information:

High Temperature	89°F at Thompson Falls (24 th)	Greatest Precip	9.78" at Heart Butte (Pondera)
Low Temperature	23°F at Deer Lodge (3 rd)		10.70" at Noisy Basin SNOTEL
Warmest Ave Temp	64.9°F at Glendive	Peak Wind Gust	74 mph at Dillon Agri (24 th)
Coolest Ave Temp	46.2°F at Elk Park		
Range of Temp departures	-4.5°F at Gold Butte to -0.1°F at Livingston	Highest Ave Wind	13.0 mph at King Coulee 14.3 mph at Deep Creek
21 city mean monthly Temperature/Normal	58.2/60.3F 2.1F below normal. 27 th coldest of record (since 1880). 19 th percentile. Jan-Jun 37.1/38.8 1.7F below normal. 52 nd coolest of record.	20 city mean monthly wind speed/Normal	8.7 mph/8.7 mph; 25 th calmest of record (since 1936). 32 nd percentile. Jan-Jun 9.6mph/10.0 0.4-mph below normal. 37 th calmest of record.
22 city mean monthly precipitation/Normal	2.88/2.59" – 111% of normal. 54 th wettest of record (since 1880). 58 th percentile Jan-Jun 9.60"/8.54" 1.06" above normal. 31 st wettest of record.		

**Historical Rank of Precipitation (inches)
for the Current Month and Water Year to Date**

Location	June	% of Norm	Rank	Pcntl	Oct 1 – Jun 30	% of norm	Rank	Pcntl	Years
Baker	2.62	103%			9.49	117%			16
Billings	1.75	93%	66	57	14.47	128%	101	89	113
Belgrade	4.08	166%	72	92	10.71	99%	41	53	77
Butte	3.43	152%	101	83	8.75	97%	61	50	120
Cut Bank	5.35	210%	100	94	11.49	160%	96	90	106
Dillon	2.22	113%	50	66	5.95	81%	23	30	74
Glasgow	2.26	97%	55	47	7.10	92%	41	35	114
Great Falls	4.18	165%	99	80	13.34	130%	99	81	122
Havre	2.69	123%	80	59	8.39	114%	74	55	134
Helena	1.71	83%	55	40	7.19	93%	37	27	136
Jordan	1.00	40%			7.37	87%			16
Kalispell	5.24	205%	118	98	16.94	129%	116	97	120
Lewistown	2.64	86%	42	35	10.18	86%	29	24	118
Livingston	2.30	96%	63	56	11.09	101%	70	69	109
Miles City	4.29	171%	115	84	11.36	129%	99	72	137
Missoula	2.00	93%	77	56	10.55	97%	66	50	132
Mullan Pass	3.66	141%	63	83	42.55	125%	63	86	73
Wolf Point	1.39	51%			5.08	64%			16
Glendive	3.07	128%	60	50	11.18	123%	79	71	111
Sidney	0.83	30%	4	4	6.73	72%	18	24	73
BZN-MSU	3.75	121%	106	77	16.56	107%	109	81	134

Rankings and Percentiles are 1=driest, higher numbers=wetter.

For an automated version of this chart, updated daily, go to

<http://www.wrh.noaa.gov/tfx/dx.php?wfo=tfx&type=&loc=products&fx=PCPNTOTALS>

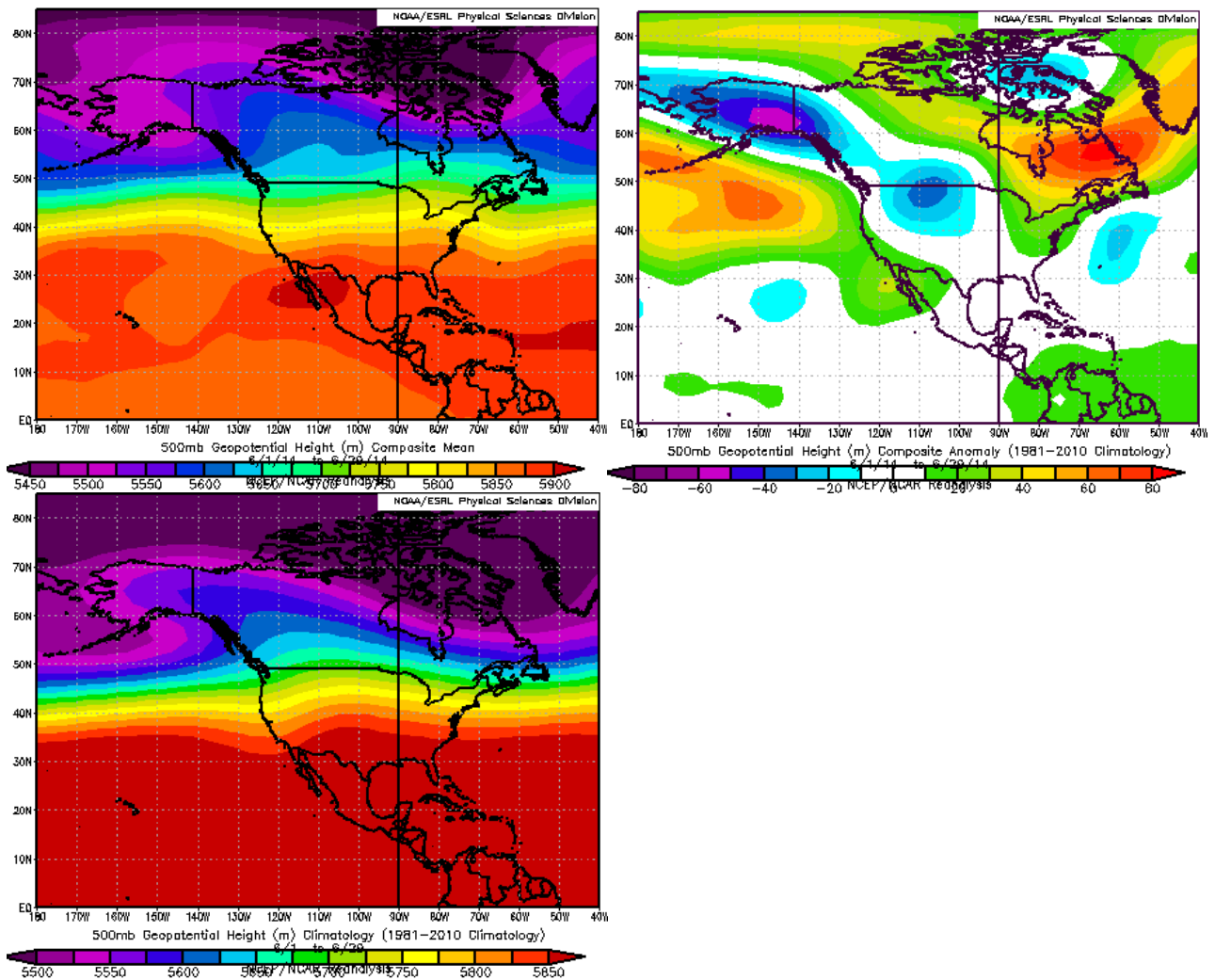


Figure 1. Mean flow at 500 millibars (~18,000 ft) for this month (top-left) and departure from normal (top-right). Average flow for June (bottom-left). While a ridge is normal for June (bottom-left), this June had general westerly flow (top-left).

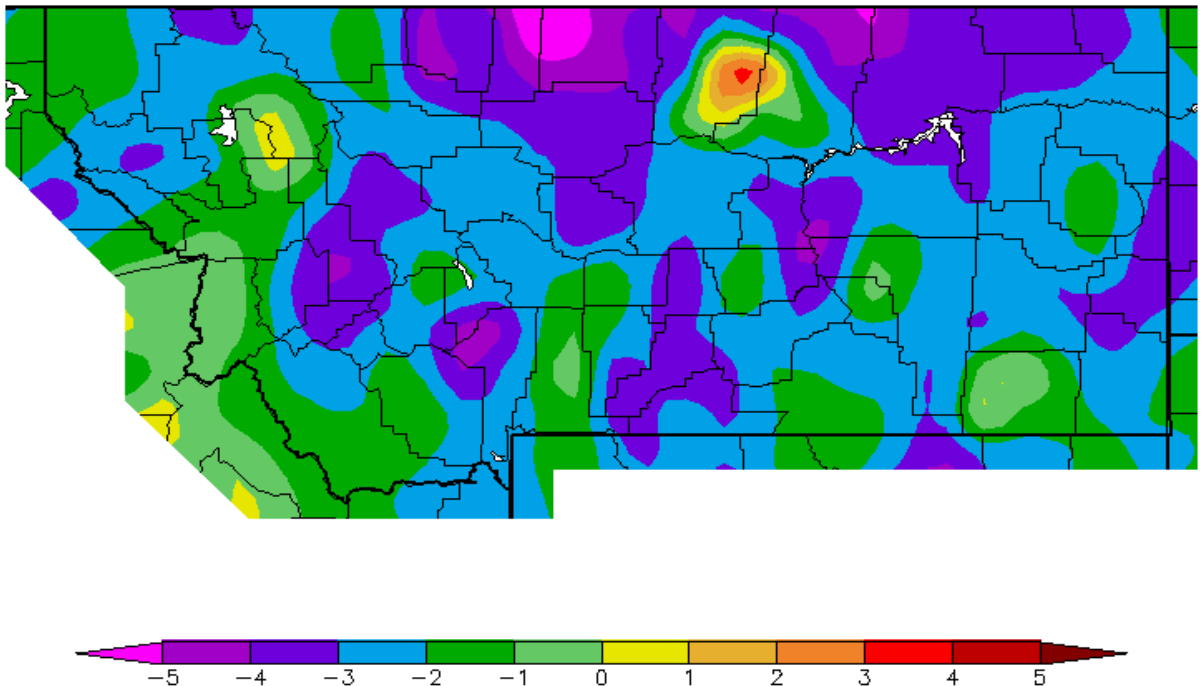


Figure 2. June 2014 temperature departures from normal (°F) (Western Region Climate Center).

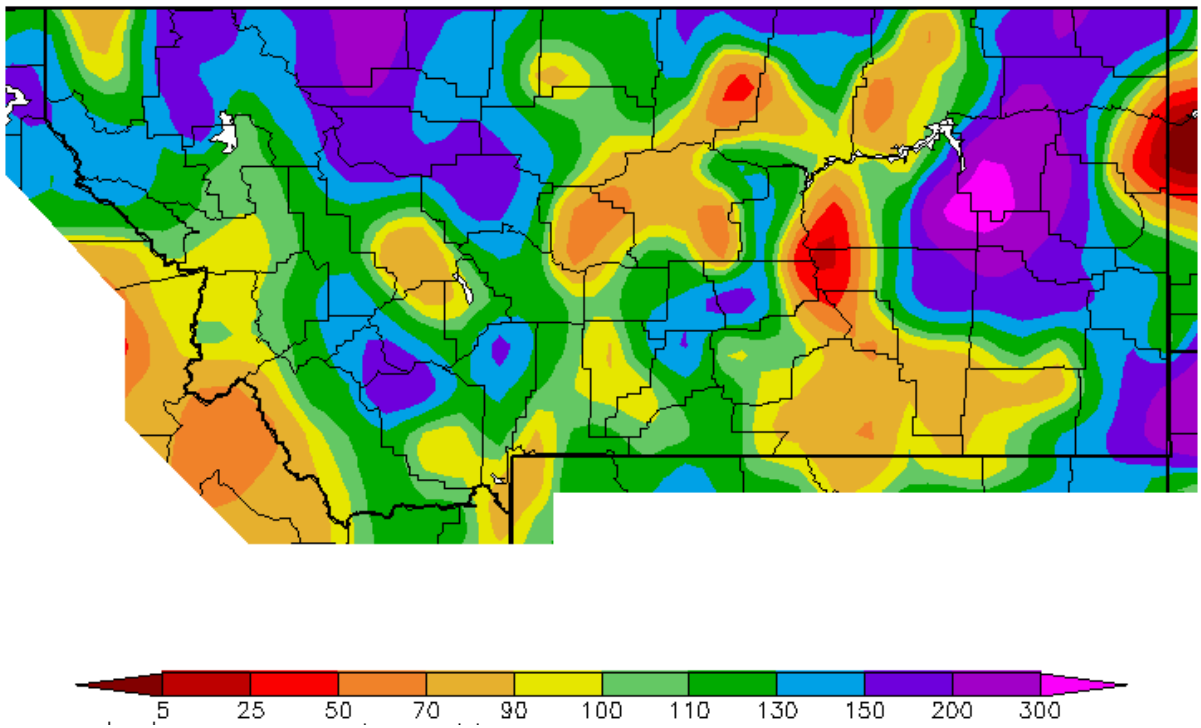


Figure 3. June 2014 precipitation departures from normal (percent) (Western Region Climate Center).



Figure 4. Wind turbine near Great Falls after being hit by lightning on June 20, 2014 (photo credit KRTV)



Figure 5. A large EF3 tornado near Camp Crook, SD (Capitol, MT) on June 17, 2014.

For a state map of % of normal water year precipitation (updated around the 7th of each month), go to:
http://www.wrh.noaa.gov/tfx/image.php?wfo=tx&type=data&loc=hydro&fx=watyr_pcntnorm.png

For the latest information on mountain snow pack from the NRCS, go to:
<http://www.mt.nrcs.usda.gov/snow/index.html>

For the latest U.S. Drought Monitor, issued weekly by the Climate Prediction Center (CPC), go to:
<http://www.drought.unl.edu/dm/monitor.html>

These data are preliminary and have not undergone final QC by NCDC. Therefore, these data are subject to revision. Final and certified climate data can be access at the National Climatic Data Center (NCDC) <http://www.ncdc.noaa.gov>. Many more links are on the Drought Information Page of the NWS Great Falls web site at <http://www.wrh.noaa.gov/tfx/main/drought.php?wfo=tx>. The climatological record for normals is 1981-2010. The ranking period for temperature, precipitation and snowfall is since 1880. The ranking period for wind speeds is since 1936. The ranking period for soil moisture is since 1995.